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ABSTRACT

This article explores the perennial tension between the demands of management for quality projects that can be used to attract new markets and students and the traditional scholarly approach to learning. Universities are unique environments compared to industry settings. They are unique in that the responsibility for the quality of the teaching material rests with highly autonomous professionals. The feeling is that the application of traditional project management techniques with tight deadlines and the production of a product at the end does not fit scholarly activities requiring reflection and discourse. The costs of setting up new learning technologies and the skill sets required to generate quality materials are driving the need for more effective course development processes. This is forcing institutions to reasscss how course development projects using new technology are undertaken. This paper discusses these issues and offers a model that aims to combine the effectiveness of project management techniques with the scholarly approach of action learning, based on research and the experience at RMIT University (Australia). (Contains 20 references.) (Author/MES)

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WHERE ACADEMIA MEETS MANAGEMENT: A MODEL FOR THE EFFECTIVE DEVELOPMENT OF QUALITY LEARNING MATERIALS USING NEW TECHNOLOGIES

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Abstract

This article explores the perennial tension between the demands of management for quality product which can be used to attract new markets and students and the traditional scholarly approach to learning. Universities are unique environments compared to industry settings. They are unique in that the responsibility for the quality of the teaching material rests with highly autonomous professionals. The feeling is that the application of traditional project management techniques with tight deadlines and the production of a product at the end does not fit scholarly activities requiring reflection and discourse. The costs of setting up new learning technologies and the skill sets required to generate quality materials are driving the need for more effective course development processes. This is forcing institutions to re-assess how course development projects using new technology are undertaken. This paper offers a model which aims to combine the effectiveness of project management techniques with the scholarly approach of action learning, based on research and the experience at RMIT.

Keywords

planning, project management, quality, scholarship, action learning

Introduction

Programs and courses are under continual improvement in all institutions, even if there is no formal documentation of the process. The existing climate of shrinking budgets in which most institutions operate means that all processes operating have to be examined and their benefits captured to ensure that any potential benefits to the institution are delivered.

The RMIT Teaching and Learning Strategy (1998-2000) set the development of more flexible and student centred learning as a key to the future survival of the university. A series of initiatives have been born to implement this strategy. RMIT decided that the development of a new online learning and management system was a key component of implementing the Teaching and Learning Strategy. As a result, about 50 million dollars has been allocated to develop and maintain the Distributed Learning System (DLS) and the Academic Management System (AMS).

The DLS has been in operation since Semester One 1999 and its use has grown rapidly (see Table 1 below). The DLS consists of a suite of web-based course development tools operating behind a secure portal which enables students to access their learning resources and other university services over the local internal network or over the internet.

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Version of the DLS	Number of registered courses
Benchmark – semester one 1999	45
Semester two 1999	225
Semester one 2000	683
Semester one 2001	1053

Table 1: Growth of number of courses registered in the RMIT DLS (source, DLS system data)

The AMS is still under development and is due for its first release in October 2001. It aims to integrate all university processes to enable staff and students to access RMIT services via the web, anywhere, anytime. These developments are moving a long way towards increasing access and flexibility for students.

However, the use of the technology to deliver courses to students has raised a number of economic, pedagogical and staff development issues.

> At RMIT, the strategy is to use the new technology as a means of encouraging a re-thinking of teaching and learning practices, not simply transferring established practice to an online environment. In this case, the technology becomes a medium to promote professional growth (Kenny & McNaught, 2000).

The costs of the implementation have led RMIT management to look for return on the investment, however, the skill levels of staff, and the resources available to design and develop quality materials for the online environment have lagged behind the managerial requests. There is an on-going tension about how to address the issues of the need for quality products and the professional growth required to learn how provide meaningful learning experiences using the DLS.

Quality Problems with Targets

The RMIT Teaching and Learning Strategy (1998-2000) advocated that RMIT must adopt more student centred and flexible approaches to learning to survive in a more competitive education market. Targets were set as a part of the RMIT Teaching and Learning Strategy (1998-2000) to achieve 60% of courses 'with some flexible component' by the end of 2000. A key for achieving this flexibility was the adoption of online technologies. The new technologies provide the impetus to re-consider how teaching and learning are organized within RMIT; they are a catalyst for the renewal of programs and courses as well as student administrative systems to make them more responsive to student needs.

The rapid growth in the use of the DLS, illustrated in Table 1, does not give the full story. Many departments concentrated on meeting the 60% targets by having courses created on the DLS. When a formal review of the courses on the DLS was commissioned in semester one 2000 to ascertain the progress towards offering more flexible courseware online and to gauge the return on investment. The quality review (McNaught, et al., 2000) showed some concerning results. About 50% of courses on the DLS were 'empty shells' with little or no course material or activity. Most of the rest were grossly under developed. Among the recommendations from the review was the establishment of clear QA processes, to be applied all to courses using the DLS:

> The ongoing need for toolset training to be linked to educational design training was noted. The need for professional development related to these new emerging QA processes is also clear (Kenny & McNaught, 2000).

The result was for management to call for more evidence of a return on the investment. Faculties were asked to identify strategic courseware that could be developed more rapidly. Unfortunately the underlying planning processes and resourcing was not in put in place to facilitate it, so this process has encountered problems also.

The Issue of Quality

Quality Assurance is an institutional issue and most institutions now have processes in place. Bates (2000) links quality and cost effectiveness with the use of project management processes

> For high quality, cost effective results, a project management approach is recommended, based on funding tied to clearly articulated project objectives, team work, defined budgets and production schedules (Bates, 2000; p. 2).

He describes (pp. 68-75) a project management process which is based around developing an initial project proposal. In developing the proposal, the project is thoroughly defined, the expectations of all parties is clarified and ultimately the proposal is signed-off by the head of department and the dean. A university wide board then decides on the projects to receive funding based on a set of criteria.

Experience indicates, Kenny (2000), that careful institution-wide planning processes are required. Inglis, Ling and Joosten (1999) maintain these should be negotiated between all those involved in the initiative, operate at all levels of the organisation

> This does not imply that the vision of the project and the planning of its implementation need to be a top-down process. On the contrary, there needs to be ownership, vision and enthusiasm at all levels of the organisation. (Inglis, Ling & Joosten, 1999; p. 143)

However, unless the evaluation occurs in the context of the institutional processes at large, then the valuable learning opportunities inherent in these projects will be lost to the institution. Laurillard (1997) contends:

> The university must have a technical and pedagogical innovative environment for R&D projects providing opportunities to trial and experiment and to collect feedback on these via the quality assurance process. ... Many such pilot experiments in universities have been conducted in isolation from the universities management process.

Bain (1999) considered evaluation reports of several projects, and concluded that the context in which an innovation is occurring has to be considered.

> ...the benefits were short-lived and/or did not transfer. This finding offers a salutary caution to all educational innovators and underscores the need to view innovation within the institutional contexts in which it will thrive or die...(Bain, 1999; p. 170).

A Cultural Shift - A New Way of Working

Bates (2000) compares a university to a "Post-Fordist" organisation, particularly as developing quality programs involves teams largely self-governing experts loosely held together by a common goal or purpose.

> Teaching with technology requires a high skill level and this necessitates training not just in technological matters but also in educational practice. Training needs to be embedded in the course development process and the project management model can assist this. (Bates, 2000; p. 3).

The complexity involved in producing quality online courseware necessitates that the process be an iterative one. It will usually require the formation of development teams with a range of skills. These include project management skills, educational design expertise for the web and possibly technical production skills.

This is a new way of working for many academics, who, as content experts, are used to working and developing course material either alone or with other academics. In the online context they will be required to collaborate as a part of a multi-disciplinary team to produce quality courseware. This is particularly the case when a program level re-development is being undertaken.

Much of the initial renewal activity on the DLS during 1998 and 2000 has occurred with little understanding of the nature of the new learning environment or the complexity of the development process. The time and support required for staff to adapt their teaching styles to the use of the DLS and be able to develop educationally sound approaches has been under-estimated and under resourced.

When we consider the complexity of program renewal, this focus on improving quality through the professional growth of staff is very important. Taylor (2000) explains this in terms of nurturing cultural change.

> Quality is an important issue, and as progress is made, it will assume a more salient position in the scheme of things. But success in persuading staff to engage with new technology will depend upon engendering and nurturing cultural change in the faculties, with emphasis on their need to re-think their pedagogical approach and curriculum design to take account of the new technology, not on their capacity to generate product.

Program Renewal

The term 'Program Renewal' has been coined at RMIT to describe the process of re-shaping and re-organising the learning experiences of students to better reflect the requirements of the modern work environment. Teaching staff are being asked to examine the traditional approaches and content to ensure that the Graduate Capabilities (Bowden, Hart, King, Trigwell & Watts, 2000) and life-long learning principles are developed and assessed as central components of students' experiences in all programs. The Graduate Capabilities include many generic skills which studies have shown are required for make learning more relevant to the requirements of the modern workplace.

Kenny and McNaught (2000) point to the complexity of the task

> To promote quality in teaching and learning is a complex task. In the classroom, it has to do with the teaching practices, student capabilities, resources, design of the subject and the types of assessment undertaken. Many staff may need professional development in some of these areas to go along with the training and professional development associated with the use of new learning technologies themselves. .... Teachers may therefore feel uneasy on two accounts; they are learning new skills while operating within an unfamiliar environment.

There is a considerable amount of professional growth and learning required to produce quality courses and programs in any medium, but the technological medium presents new challenges.

A Model for a New Process

It is clear that the development of quality courseware is a complex process. According to Shenhar and Dvir (1996), the more complex projects require higher levels of communication through multiple channels, many professionals and academics on the project and a moderately flexible management style expecting many changes.

Management style becomes progressively more flexible as the complexity of the project increases. In terms of the project which they studied

> all of the projects had a regular system of meetings for problem solving and information sharing...In general the atmosphere in these meetings was one of open communication and continuous discussions. Projects had to employ a much more flexible attitude and they had to make extensive trade-offs. We described this style as moderately flexible (Shenhar & Dvir, 1996).

Critical Success Factors

The development of innovative new courses therefore relies on the capability of staff to use the system in creative ways. Learning to use the technology is therefore a major change and innovation project in itself. Lester (1998) identifies five critical factors for successful projects.

1. Senior Management commitment
2. Organisational structure and processes that support the venture
3. Attractive new product concepts that support the venture
4. Venture teams with appropriate staffing and resources, able to communicate effectively with management and markets
5. Project management able to focus on reducing uncertainties as early as possible.

Other researchers quoted in Shenhar and Dvir (1996) investigated critical success factors for the management of projects, identifying a universal set including: project mission, project planning, project control, top management support, customer involvement, ... From the study of educational

technology projects, Alexander, McKenzie & Geissinger (1998) identified a similar set of success factors for educational projects in tertiary institutions. Success here being defined as leading to improved learning outcomes.

Balancing Scholarship and Management

For Bates (2000), the main advantages of the project management approach is the efficient allocation and use of scarce resources. Each year staff time is allocated to the approved projects. However, there is a clear tension between the classic project management approach, and the traditional way in which professional staff at a university work. Traditionally, teachers are experts used to quite a degree of autonomy in their work.

> The biggest problem with this approach is that it is often alien to academic environments, where teachers and instructors are used to working as autonomous individuals, especially with regard to their teaching (Bates, 2000, p. 72).

In an attempt to overcome this problem, which is largely a cultural one, Bates (2000) advocates

> ... a much looser project management approach that specifies responsibilities and completion dates but does not attempt to quantify every activity on a micro level. The project manager and the academic have a good deal of freedom to move resources around and adjust schedules to meet the reality of academic life.
>
> However at the end of the day, there still has to be a course developed and deadlines met. (Bates, 2000, p. 73)

This compares favourably with the project management model proposed by Shenhar and Dvir (1996) which suggests more open management systems and communication processes and addresses some of the concerns put forward by Phelps, Ledgerwood & Bartlett, (2000) about their experience of working on academic development projects.

Promoting Scholarship

Complex projects such as program and course renewal are well suited to an 'action learning' approach (Zuber-Skerritt, 2000). 'Action learning' is scholarship in action. Integral to the process is reflection on learning, sharing the learning with others and applying the learning to improve the next iteration. Bates (2000, chapter 3) refers to the "Lone Ranger Model" of development of technology based materials. This is the traditional approach of providing seeding grants to fund individuals as early adopters. Among the disadvantages of this model he cites the difficulty in budgeting and planning for such an approach and "dissemination of knowledge gained from the experience is often poor or haphazard."

Laurillard, (1993) proposed the 'conversational model' of learning. In essence, she contends that learning occurs when the student acts for a particular purpose and then receives feedback on that action. Laurillard (1997) claims that a similar model of learning can be applied at the institutional level to create a 'learning organisation'. Kenny and McNaught (2000) support this and see the quality processes of an institution as one means of establishing the 'conversation'.

> Thus the institutional quality processes need to be such that the culture and procedures encourage the flow of information across subject, course, departmental and faculty boundaries. It is the contention of this paper, that where quality cycles do not enable this flow of information, the lessons learned do not easily go beyond the subject concerned. The quality educational experiences may remain isolated instances rather than a common occurrence, expertise is not shared, students do not benefit and the ROI is reduced. (Kenny & McNaught, 2000).

In a learning organisation, therefore, there needs to be a conversation or 'learning' across the institutional boundaries. There must be information flows so that these conversations occur across boundaries. For institutional learning to occur, the course renewal teams must have a conversation, or share information, with other groups in the institution. The project management model

employed will need to recognize this and incorporate it into the resourcing, planning, monitoring and communication processes for the project. However there will need to be a 'conversation' with other Renewal Program teams across the university also, a sharing of information and learning.

A culture of scholarship requires an institutional adoption of both the philosophy of reflective practice and the processes to support it. A 'learning organisation' needs to develop an effective means to capture and make known the learning occurring in the range of projects which are underway and to maximize the staff capacity to carry-on further development. The quality assurance (QA) process is an ideal vehicle for this as the development of quality programs and courses is a cyclical process. The QA process involves cycles of reflecting, planning, implementing, evaluating and reflecting.

For an organisation to benefit, staff have to be actively encouraged and supported to carry out action learning as an integral part of their work. This has implications for how projects will be set-up, resourced and evaluated. Quality has to be continually maintained, so it is essential that the capability of staff is developed along with the learning resources, so that continual improvements can be made.

The critical part of the process is the reflection. Biggs (1999) supports the importance of reflection as part of the learning cycle,"...my own assumption is that helping teachers to improve their teaching is best done using a theory that helps teachers reflect on what they are doing." (p. 60). Most project management literature derives from the study of industrial projects, and does not necessarily directly map across to the environment of educational development projects a tertiary institution. Sheasely (1999) studied a technological process to develop a new product, and he draws on an example from the chemical industry. He discusses the distinction between developing new technology and developing new products.

> Developing new technology is fundamentally different from developing new products. In the former case technology is the end result, in the latter it is the raw material. (Sheasley, 1999; p. 49).

What he means is that the 'product development' uses the 'technology' which has been developed. Technology development is essentially research, product development is the application of that research.

Boyer (1990) advocated that academic work has four aspects: discovery (research), integration, application and teaching. In translating the example given by Sheasley (1999) to a tertiary education sector, we see that the 'product development' does not merely involve the adoption and application of a new technology, it also involves the change and professional growth on the part of the staff who have to use the technology as a part of their professional practice. (Phelps et al. 2000). The new product (a renewed course for instance) requires the staff to use technology in new and innovative ways. The implementation of the technology stimulates innovation through its.
Sheasley (1999) proposes that such innovations (discovery) are best managed using a process called 'cycle time management'.

> Cycle time management is a process oriented approach to work activities in which time is the primary basis or driver upon which the overall process is designed and optimized. (p. 51).

In the context of the university sector there is a natural 'cycle time' at play, for example, academic year. Each year or semester involves a new iteration of a course, a new batch of students and so presents a natural rhythm for evaluation and revision. The periods allocated for preparation, examinations, correction, etc are all usually pre-determined by the organisation and each has its own particular demands. It makes sense from a management point of view to acknowledge the constraints under which most academic staff work within any project management process. Any project development cycle should fit into the natural rhythms of the organisation.

The Sheasley (1999) management strategy for such discovery is based on 'expectations', which focus on learning and an expectation of capture of this learning.

> 'Each review should consist a reiteration of the previous outlook for learning, a presentation of what was done and what was learned and a new plan for the research in the upcoming phase, with the ultimate goal for performance advances always in view.' (p. 54).

This process above fits in very well with the proposition of the quality assurance process advocated in many institutions today.

A Model Planning Process for Tertiary Institutions

The foregoing discussion suggests a planning process has to address both the demands for effectiveness and scholarship. Such a process would take advantage of the efficiencies of project management techniques, yet promote a course development process more suited to academic reality. The model presented here has been derived by drawing on current research and experience. It aims to enable tertiary institutions to produce quality outcomes in educational projects and maximize the effectiveness of new technology

The planning process advocated involves the incorporation of key project management processes with the realities of life in tertiary institutions. To achieve quality, the organisation has to put in place processes to enable staff to plan, reflect, share and document their learning. This is where the project planning aspects can really begin to add value and commitment to the to the process.

The project management plan would have to ensure that there is sufficient resourcing provided for professional development activities and that this occurs as a part of the faculty departmental planning processes. Such activities as team meetings, materials development and testing require considerable resources and time, as does professional development to address the key pedagogical questions. These issues need to be considered very early on in the process as there is a considerable 'lead time' involved in most institutions, with planning occurring on an annual basis. The professional independence of the content experts needs to be maintained with their responsibility for the content development, but within a context of a commitment to on-going reflection and improvement of the educational outcomes.

Key Characteristics of the Model

The complexities of producing quality educational outcomes has been discussed and the centrality of the capability and professionalism of the staff to achieve this is recognised. The model aims to combine the benefits of project management to ensure the conditions are set-up to enable quality educational outcomes and value scholarship and ownership within the project teams and the individual staff members. For these outcomes to occur, the process needs to be embedded within the institutional processes and must include the following key elements:

- Direct links with the institutional and faculty strategies
- Project leader (manager) is appointed
- A full project proposal is developed, costed and signed –off
- On approval, a Project Team is put in place and they develop a full plan in line with the proposal.
- Time lines and planning account for the cyclical periods or natural rhythms of the institution.
- Staff workplans and reward systems reflect their commitment to the project.
- The Plan resources and promotes scholarship through reflective practice by the adoption of 'action learning' processes.
- The plan embeds the professional development and support
- The communication and reporting processes facilitate sharing of the learning between project teams and across institutional boundaries.
- Has a direct link with the quality assurance processes through peer review, user trialling, student feedback, etc.

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